

---

# Archives of Virology

Continuation of  
Archiv für die gesamte Virusforschung

Edited by  
E. Norrby, Stockholm  
C. Scholtissek, Giessen  
G. J. Todaro, Bethesda, Md.  
D. A. J. Tyrrell, Harrow  
J. Vilček, New York, N.Y. (Editor-in-Chief)

---

Vol. 64, 1980

ISSN 0304-8608

Springer-Verlag  
Wien New York



# Archives of Virology

Continuation of

Archiv für die gesamte Virusforschung

## Advisory Board

- |   |                                     |
|---|-------------------------------------|
| J. A. Armstrong, Porth                  | C. A. Mims, London                  |
| C. Basílico, New York, N. Y.            | F. A. Murphy, Fort Collins, Colo.   |
| J. Casals, New Haven, Conn.             | M. Mussgay, Tübingen                |
| R. M. Chanock, Bethesda, Md.            | K. Paucker, Philadelphia, Pa.       |
| E. De Clercq, Leuven                    | U. Pettersson, Uppsala              |
| R. W. Compans, Birmingham, Ala.         | W. Plowright, Compton, Berks.       |
| F. Deinhardt, München                   | J. S. Porterfield, Oxford           |
| E. De Maeyer, Orsay                     | C. R. Pringle, Glasgow              |
| R. R. Dourmashkin, Harrow               | F. Rapp, Hershey, Pa.               |
| K. B. Easterbrook, Halifax, Nova Scotia | W. E. Rawls, Hamilton, Ontario      |
| B. N. Fields, Boston, Mass.             | B. Roizman, Chicago, Ill.           |
| R. M. Franklin, Basel                   | A. Shelokov, San Antonio, Tex.      |
| R. M. Friedman, Bethesda, Md.           | D. I. H. Simpson, Salisbury, Wilts. |
| D. H. Harter, Chicago, Ill.             | J. J. Skehel, London                |
| H. zur Hausen, Freiburg i. Br.          | W. E. Stewart II, New York, N. Y.   |
| A. Helenius, Heidelberg                 | V. Stollar, Piscataway, N. J.       |
| T. J. Hill, Bristol                     | E. J. Stott, Compton, Berks.        |
| B. Hirt, Lausanne                       | A. Sugiura, Tokyo                   |
| M. C. Horzinek, Utrecht                 | J. Svoboda, Praha                   |
| W. K. Joklik, Durham, N. C.             | A. Vaheer, Helsinki                 |
| L. Kääriäinen, Helsinki                 | V. Vonka, Praha                     |
| D. W. Kingsbury, Memphis, Tenn.         | H. Wagner, Mainz                    |
| H.-D. Klenk, Giessen                    | A. P. Waterson, London              |
| M. Koch, Berlin                         | R. Weil, Genève                     |
| R. A. Lazzarini, Bethesda, Md.          | H. A. Wenner, Kansas City, Mo.      |
| B. W. J. Mahy, Cambridge                | D. O. White, Parkville, Victoria    |
| K. Maramorosch, New Brunswick, N. J.    | V. M. Zhdanov, Moscow               |
| V. ter Meulen, Würzburg                 |                                     |

Editorial Assistant: F. Heinz, Wien

The exclusive copyright for all languages and countries, including the right for photo-mechanical and any other reproductions including microform is transferred to the publisher.

Alle Rechte, einschließlich das der Übersetzung in fremde Sprachen und das der photo-mechanischen Wiedergabe oder einer sonstigen Vervielfältigung, auch in Mikroform, vorbehalten.

© 1980 by Springer-Verlag / Wien



# Contents: Vol. 64

## No. 1

### Original Papers

- Misra, V., Hudson, J. B.:** Minor Base Sequence Differences Between the Genomes of Two Strains of Murine Cytomegalovirus Differing in Virulence . . . . . 1
- Horisberger, M. A., Staritzky de, C., Content, J.:** Intracellular Glycosylation of Influenza Hemagglutinin: The Effect of Glucosamine . . . . . 9
- Singh, R. B., Dhar, B., Singh, B. D.:** Morphology and General Characteristics of Viruses Active Against Cowpea *Rhizobium* CB756 and 32H1 . . . . . 17
- Hugentobler, Anne-Lise, Bienz, K.:** Influence of Poliovirus Infection on S-Phase and Mitosis of the Host Cell . . . . . 25
- Cassai, E., Luca di, D., Manservigi, R., Tognon, M., Rotola, Antonella:** Comparative Analysis of the Virion Polypeptides Specified by Herpes Simplex Virus Type 2 Strains . . . . . 35
- Rweyemamu, M. M., Parry, N. R., Sargent, Joan:** The Application of a Single Radial Haemolysis Technique to Foot-and-Mouth Disease Virus—Antibody Study . . . . . 47
- Stebbing, N., Lindley, I. J. D.:** Anti-Viral Effects of Single-Stranded Polynucleotides Against Avirulent Semliki Forest Virus Infection of Mice and Avirulent Infection of Rats with Encephalomyocarditis Virus . . . . . 57
- Lascano, E. F., Berria, Maria I.:** Histological Study of the Progression of Herpes Simplex Virus in Mice . . . . . 67

### Brief Reports

- Okada, K., Fujimoto, Y., Nakanishi, Y. H., Onuma, M., Mikami, T.:** Cohelical Arrangement of the DNA Strand in the Core of Marek's Disease Virus Particles . . . . . 81
- Rasilo, Maija-Liisa, Renkonen, O.:** Semliki Forest Virus Glycans Analyzed by Affinity Chromatography, Hydrazinolysis and Paper Chromatography . . 87
- Wardley, R. C., Wilkinson, P. J.:** A Microtechnique for the Titration of African Swine Fever Virus . . . . . 93

## No. 2

### Original Papers

- Fong, C. K. Y., Bia, F., Hsiung, G. D.:** Ultrastructural Development and Persistence of Guinea Pig Cytomegalovirus in Duct Cells of Guinea Pig Submaxillary Gland . . . . . 97
- Chadha, K. C., Grob, P. M., Hamill, R. L., Sulkowski, E.:** Glycosylation of Human Leukocyte Interferon: Effects of Tunicamycin . . . . . 109
- Goldstein, N. I., McIntosh, A. H.:** Glycoproteins of Nuclear Polyhedrosis Viruses . . . . . 119

<b>Jennings, M., Boorman, J.:</b> The Susceptibility of the Sandfly <i>Lutzomyia longipalpis</i> (Lutz & Neiva), Diptera, Phlebotomidae, to Laboratory Infection with Bluetongue Virus . . . . .	127
<b>Hübschle, O. J. B.:</b> Bluetongue Virus Hemagglutination and Its Inhibition by Specific Sera . . . . .	133
<b>Sundar, S. K., Ablashi, D. V., Bengali, Z. H., Levine, P. H., Nonoyama, M.:</b> Mitogenic Effect of 12-O Tetradecanoyl-Phorbol 13-Acetate on Non-Human Primate Mononuclear Cells and <i>in vitro</i> Interaction with Epstein-Barr Virus Transformation . . . . .	141
<b>Uckert, W., Wunderlich, V., Bender, E., Sydow, G., Bierwolf, D.:</b> The Protein Pattern of PMF Virus, a Type-D Retrovirus from Malignant Permanent Human Cell Lines . . . . .	155

### Brief Reports

<b>Bonnardiere, C. La, Vaureix, C. de, L'Haridon, R., Scherrer, R.:</b> Weak Susceptibility of Rotavirus to Bovine Interferon in Calf Kidney Cells . . . . .	167
<b>Florent, G.:</b> Gene Constellation of Live Influenza A Vaccines . . . . .	171

## No. 3

### Brief Review

<b>Nermut, M. V.:</b> The Architecture of Adenoviruses: Recent Views and Problems . . . . .	175
---	-----

### Original Papers

<b>Campadelli-Fiume, G., Costanzo, F., Foa'-Tomasi, L.:</b> Restriction of Herpes Simplex Virus by Ama 1 Cells. An Analysis of Viral Macromolecule Synthesis. . . . .	197
<b>Rohde, W., Scholtissek, C.:</b> On the Origin of the Gene Coding for an Influenza A Virus Nucleocapsid Protein . . . . .	213
<b>Wigand, R., Gelderblom, H., Wadell, G.:</b> New Human Adenovirus (Candidate Adenovirus 36), A Novel Member of Subgroup D . . . . .	225
<b>Drescher, J., Desselberger, U.:</b> Antineuraminidase Antibody Response to Vaccination of Chickens with Intact Virus and Different Subunit Preparations of the Influenza Virus Strains A/Sing/1/57 (H2N2), A/Hong Kong/1/68 (H3N2) and A/Port Chalmers/1/73 (H3N2) . . . . .	235
<b>Werner, G. T., Jentzsch, U., Metzger, E., Simon, J.:</b> Studies on Poxvirus Infections in Irradiated Animals . . . . .	247
<b>Bruns, Hanna:</b> Electron Microscopic Studies of Herpes Simplex Virus Type 1 Infection of Macrophages, T- and B-Lymphocytes of Mice . . . . .	257
<b>Müller, W. E. G., Falke, D., Zahn, R. K., Arendes, J.:</b> Ribonuclease H Levels in Herpes Simplex Virus-Infected Cells . . . . .	269
<b>Weiland, F., Bruns, M.:</b> Ultrastructural Studies on Maedi-Visna Virus . . . . .	277



**No. 4****Brief Review**

- Horodniceanu, F., Michelson, Susan:** Assessment of Human Cytomegalovirus Antibody Detection Techniques . . . . . 287

**Original Papers**

- Griffiths, P. D., Buie, K. J., Heath, R. B.:** Persistence of High Titre Antibodies to the Early Antigens of Cytomegalovirus in Pregnant Women . . . 303
- Müller, G., Nielsen, G., Baigent, C. L.:** Electron Microscopical Particle Counting in Virology. III. Parameters Governing the Efficiency of Sedimentation Techniques and Its Improvement with the Application of Poly-L-Lysine 311
- Voiland, A., Bardeletti, G.:** Fatty Acid Composition of Rubella Virus and BHK 21/13S Infected Cells . . . . . 319
- Skinner, G. R. B., Williams, D. R., Moles, A. W., Sargent, A.:** Prepubertal Vaccination of Mice Against Experimental Infection of the Genital Tract with Type 2 Herpes Simplex Virus . . . . . 329
- Gaidamovich, Sophia Ya., Melnikova, E. E., Väänänen, P., Penttinen, K.:** Radial Haemolysis in Gel: A Comparative Study with Chikungunya, Japanese Encephalitis and Rubella Viruses, Representatives of Three Genera of Togaviridae Family . . . . . 339
- Wigand, R.:** Age and Susceptibility of Swiss Mice for Mouse Adenovirus, Strain FL . . . . . 349
- Nettleton, P. F., Rweyemamu, M. M.:** The Association of Calf Serum with the Contamination of BHK 21 Clone 13 Suspension Cells by a Parvovirus Serologically Related to the Minute Virus of Mice (MVM) . . . . . 359
- Lancz, G. J.:** Physical Integrity of Herpes Simplex Virus Following Thermal Inactivation . . . . . 375

**Brief Report**

- Ogawa, T., Sugimura, T., Itohara, S., Tanaka, Y., Kumagai, T.:** Intracerebral Pathogenicity of Influenza A Viruses for Chickens . . . . . 383

**Listed in Current Contents**

## Author Index

- Ablashi, D. V. s. Sundar, S. K.  
Arendes, J. s. Müller, W. E. G.
- Baigent, C. L. s. Müller, G.  
Bardeletti, G. s. Voiland, A.  
Bender, E. s. Uckert, W.  
Bengali, Z. H. s. Sundar, S. K.  
Berria, Maria, I. s. Lascano, E. F.  
Bia, F. s. Fong, C. K. Y.  
Bienz, K. s. Hugentobler, Anne-Lise  
Bierwolf, D. s. Uckert, W.  
Bonnardiére, C. La, Vaureix, C. de, L'Haridon, R., Scherrer, R.: Weak Susceptibility of Rotavirus to Bovine Interferon in Calf Kidney Cells. (Brief Report) 167.  
Boorman, J. s. Jennings, M.  
Bruns, Hanna: Electron Microscopic Studies of Herpes Simplex Virus Type 1 Infection of Macrophages, T- and B-Lymphocytes of Mice. 257.  
Bruns, M. s. Weiland, F.  
Buie, K. J. s. Griffith, P. D.
- Campadelli-Fiume, G., Costanzo, F., Foa'-Tomasì, L.: Restriction of Herpes Simplex Virus by Aml 1 Cells. An Analysis of Viral Macromolecule Synthesis. 197.  
Cassai, E., Luca di, D., Manservigi, R., Tognon, M., Rotola, Antonella: Comparative Analysis of the Virion Polypeptides Specified by Herpes Simplex Virus Type 2 Strains. 35.  
Chadha, K. C., Grob, P. M., Hamill, R. L., Sulkowski, E.: Glycosylation of Human Leukocyte Interferon: Effects of Tunicamycin. 109.  
Content, J. s. Horisberger, M. A.  
Costanzo, F. s. Campadelli-Fiume, G.
- Desselberger, U. s. Drescher, J.  
Dhar, B. s. Singh, R. B.  
Drescher, J., Desselberger, U.: Antineuraminidase Antibody Response to Vaccination of Chickens with Intact Virus and Different Subunit Preparations of the Influenza Virus Strains A/Sing/1/57 (H2N2), A/Hong Kong/1/68 (H3N2) and A/Port Chalmers/1/73 (H3N2). 235.
- Falke, D. s. Müller, W. E. G.  
Florent, G.: Gene Constellation of Live Influenza A Vaccines. (Brief Report) 171.  
Foa'-Tomasì, L. s. Campadelli-Fiume, G.
- Fong, C. K. Y., Bia, F., Hsiung, G. D.: Ultrastructural Development and Persistence of Guinea Pig Cytomegalovirus in Duct Cells of Guinea Pig Submaxillary Gland. 97.  
Fujimoto, Y. s. Okada, K.
- Gaidamovich, Sophia Ya., Melnikova, E. E., Väänänen, P., Penttinen, K.: Radial Haemolysis in Gel: A Comparative Study with Chikungunya, Japanese Encephalitis and Rubella Viruses, Representatives of Three Genera of Togaviridae Family. 339.  
Gelderblom, H. s. Wignad, R.  
Goldstein, N. I., McIntosh, A. H.: Glycoproteins of Nuclear Polyhedrosis Viruses. 119.  
Griffiths, P. D., Buie, K. J., Heath, R. B.: Persistence of High Titre Antibodies to the Early Antigens of Cytomegalovirus in Pregnant Women. 303.  
Grob, P. M. s. Chadha, K. C.
- Hamill, R. L. s. Chadha, K. C.  
Heath, R. B. s. Griffiths, P. D.  
Horisberger, M. A., Staritzky de, C., Content, J.: Intracellular Glycosylation of Influenza Hemagglutinin: The Effect of Glucosamine. 9.  
Horodniceanu, F., Michelson, Susan: Assessment of Human Cytomegalovirus Antibody Detection Techniques. (Brief Review) 287.  
Hsiung, G. D. s. Fong, C. K. Y.  
Hübschle, O. J. B.: Bluetongue Virus Hemagglutination and Its Inhibition by Specific Sera. 133.  
Hudson, J. B. s. Misra, V.  
Hugentobler, Anne-Lise, Bienz, K.: Influence of Poliovirus Infection on S-Phase and Mitosis of the Host Cell. 25.
- Itohara, S. s. Ogawa, T.
- Jennings, M., Boorman, J.: The Susceptibility of the Sandfly *Lutzomyia longipalpis* (Lutz & Neiva), Diptera, Phlebotomidae, to Laboratory Infection with Bluetongue Virus. 127.  
Jentsch, V. s. Werner, G. T.
- Kumagai, T. s. Ogawa, T.



- Lancz, G. J.: Physical Integrity of Herpes Simplex Virus Following Thermal Inactivation. 375.
- Lascano, E. F., Berria, Maria I.: Histological Study of the Progression of Herpes Simplex Virus in Mice. 67.
- Levine, P. H. s. Sundar, S. K.
- L'Haridon, R. s. Bonnardiere, C. La
- Lindley, I. J. D. s. Stebbing, N.
- Luca di, D. s. Cassai, E.
- Manservigi, R. s. Cassai, E.
- McIntosh, A. H. s. Goldstein, N. I.
- Melnikova, E. E. s. Gaidamovich, Sophia Ya.
- Metzger, E. s. Werner, G. T.
- Michelson, Susan s. Horodniceanu, F.
- Mikami, T. s. Okada, K.
- Misra, V., Hudson, J. B.: Minor Base Sequence Differences Between the Genomes of Two Strains of Murine Cytomegalovirus Differing in Virulence. 1.
- Moles, A. W. s. Skinner, G. R. B.
- Müller, G., Nielsen, G., Baigent, C. L.: Electron Microscopical Particle Counting in Virology. III. Parameters Governing the Efficiency of Sedimentation Techniques and Its Improvement with the Application of Poly-L-Lysine. 311.
- Müller, W. E. G., Falke, D., Zahn, R. K., Aren-des, J.: Ribonuclease H Levels in Herpes Simplex Virus-Infected Cells. 269.
- Nakanishi, Y. H. s. Okada, K.
- Nermut, M. V.: The Architecture of Adeno-viruses: Recent Views and Problems. (Brief Review) 175.
- Nettleton, P. F., Rweyemamu, M. M.: The Association of Calf Serum with the Contamination of BHK21 Clone 13 Suspension Cells by a Parvovirus Serologically Related to the Minute Virus of Mice (MVM). 359.
- Nielsen, G. s. Müller, G.
- Nonoyama, M. s. Sundar, S. K.
- Ogawa, T., Sugimura, T., Itohara, S., Tanaka, Y., Kumagai, T.: Intracerebral Pathogenicity of Influenza A Viruses for Chick-ens. (Brief Report) 383.
- Okada, K., Fujimoto, Y., Nakanishi, Y. H., Onuma, M., Mikami, T.: Cohelical Ar-rangement of the DNA Strand in the Core of Marek's Disease Virus Particles. (Brief Report) 81.
- Onuma, M. s. Okada, K.
- Parry, N. R., s. Rweyemamu, N. M.
- Penttinen, K. s. Gaidamovich, Sophia Ya.
- Rasilo, Maija-Liisa, Renkonen, O.: Semliki Forest Virus Glycans Analyzed by Affin-ity Chromatography, Hydrazinolysis and Paper Chromatography. (Brief Report) 87.
- Renkonen, O. s. Rasilo, Marija-Liisa
- Rohde, W., Scholtissek, C.: On the Origin of the Gene Coding for an Influenza A Virus Nucleocapsid Protein. 213.
- Rotola, Antonella s. Cassai, E.
- Rweyemamu, M. M., Parry, N. R., Sargent, Joan: The Application of a Single Radial Haemolysis Technique to Foot-and-Mouth Disease Virus-Antibody Study. 47.
- Rweyemamu, M. M. s. Nettleton, P. F.
- Sargent, A. s. Skinner, G. R. B.
- Sargent, Joan s. Rweyemamu, M. M.
- Scherrer, R. s. Bonnardiere, C. La
- Scholtissek, C. s. Rohde, W.
- Simon, J. s. Werner, G. T.
- Singh, B. D. s. Singh, R. B.
- Singh, R. B., Dhar, B., Singh, B. D.: Morpho-logy and General Characteristics of Viruses Active Against Cowpea Rhi-zobium CB756 and 32H1. 17.
- Skinner, G. R. B., Williams, D. R., Moles, A. W., Sargent, A.: Prepubertal Vaccination of Mice Against Experimental Infection of the Genital Tract with Type 2 Herpes Simplex Virus. 329.
- Staritzky de, C. s. Horisberger, M. A.
- Stebbing, N., Lindley, I. J. D.: Anti-Viral Effects of Single-Stranded Polynucleo-tides Against Avirulent Semliki Forest Virus Infection of Mice and Avirulent In-fection of Rats with Encephalomyocarditis Virus. 57.
- Sugimura, T. s. Ogawa, T.
- Sulkowski, E. s. Chadha, K. C.
- Sundar, S. K., Ablashi, D. V., Bengali, Z. H., Levine, P. H., Nonoyama, M.: Mitogenic Effect of 12-O Tetradecanoyl-Phorbol 13-Acetate on Non Human Primate Mono-nuclear Cells and *in vitro* Interaction with Epstein-Barr Virus Transformation. 141.
- Sydow, G. s. Uckert, W.
- Tanaka, Y. s. Ogawa, T.
- Tognon, M. s. Cassai, E.
- Uckert, W., Wunderlich, V., Bender, E., Sydow, G., Bierwolf, D.: The Protein Pattern of PMF Virus, a Type-D Retro-virus from Malignant Permanent Human Cell Lines. 155.

- Väänänen, P. s. Gaidamovich, Sophia Ya.  
Voiland, A., Bardeletti, G.: Fatty Acid Composition of Rubella Virus and BHK21/13S Infected Cells. 319.  
Vaureix, C. de s. Bonnardiere, C. La  
Wadell, G. s. Wigand, R.  
Wardley, R. C., Wilkinson, P. J.: A Microtechnique for the Titration of African Swine Fever Virus. (Brief Report) 93.  
Weiland, F., Bruns, M.: Ultrastructural Studies on Maedi-Visna Virus. 277.  
Werner, G. T., Jentzsch, U., Metzger, E., Simon, J.: Studies on Poxvirus Infections in Irradiated Animals. 247.  
Wigand, R., Gelderblom, H., Wadell, G.: New Human Adenovirus (Candidate Adenovirus 36), A Novel Member of Subgroup D. 225.  
Wigand, R.: Age and Susceptibility of Swiss Mice for Mouse Adenovirus, Strain FL. 349.  
Wilkinson, P. J. s. Wardley, R. C.  
Williams, D. R. s. Skinner, G. R. B.  
Wunderlich, V. s. Uckert, W.  
Zahn, R. K. s. Müller, W. E. G.